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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,552	02/26/2004	Hossein Sedarat	6491P059	9223

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EXAMINER

NGUYEN, LEON VIET Q

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/789,552

Applicant(s)

SEDARAT, HOSSEIN

Examiner

Leon-Viet Q. Nguyen

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,12,14-17,21,23 and 24 is/are rejected.
- 7) ☒ Claim(s) 2,3,9-11,13,18-20,22 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/4/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 3/4/2005 was filed after the mailing date of 3/4/2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

1. Claims 2 and 24 are objected to because of the following informalities:
 - a. In claim 2, the period after "the apparatus of claim 1" should be a comma.
 - b. In claim 24, "means for measure" should read "means for measuring".Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-2, 4, 7, 14, 17 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stiscia (US6738418) in view of Balch et al (US5909178).**

Re claim 1, Stiscia teaches an apparatus, comprising:

a multi-tone receiver to detect data in a multiple tone signal (xDSL modem in fig. 4, col. 1 lines 10-14. It is necessary for a modem to have a receiver), the receiver having a detector module to measure a noise power level present in the system (block 306 in fig. 6a, col. 6 line 15), and

a gain module to determine a total noise power level for a tone in the multi-tone signal (col. 6 lines 50-53) based upon an equivalent noise power algorithm (col. 6 lines 31-34, the estimate of the background noise power is interpreted to be the equivalent noise power algorithm), the gain module to use the equivalent noise power algorithm to compensate the measured noise power level (col. 6 lines 8-11).

However Stiscia fails to teach wherein the detector module detects an asymmetric Gaussian noise source in the background noise. Balch teaches detection of Gaussian noise levels (col. 5 lines 20-24 and lines 43-44) and when there is an indication of asymmetric noise in the background noise (the moving average line in fig. 1 of Balch is interpreted to be an indication of asymmetric noise).

Therefore taking the combined teachings of Stiscia and Balch as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Gaussian noise detector of Balch into the receiver of Stiscia. The motivation to combine Balch and Stiscia would be to prevent a validation threshold from falling below a programmed minimum signal-to-noise ratio (col. 4 lines 12-16).

Re claim 2, the modified invention of Stiscia teaches an apparatus wherein the detector module generates a scatter plot of noise error over time (fig. 1 in Balch) and

the detector analyses a shape of the distribution of the noise error in the scatter plot (the moving average line in fig. 1 in Balch).

Re claim 4, the modified invention of Stiscia teaches a method, comprising:
measuring a power level of noise for a first tone in a multiple tone signal (block 306 in fig. 6a in Stiscia, col. 6 line 15 in Stiscia); and
determining a Gaussian noise power level in the first tone (col. 5 lines 20-24 and lines 43-44 in Balch) and if a noise source is generating an asymmetric pattern of noise (the moving average line in fig. 1 of Balch is interpreted to be an indication of asymmetric noise).

Re claim 7, the modified invention of Stiscia teaches a method wherein the multiple tone carrier signal is a Digital Subscriber Line signal (col. 1 lines 12-14, the invention applying to ADSL DMT).

Re claim 14, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 4. It would be inherent to have a machine-readable medium storing instructions to execute the method as claimed in claim 4.

Re claim 17, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 7.

Re claim 24, Stiscia teaches an apparatus, comprising:

means for detecting data in a multiple tone signal (xDSL modem in fig.

4, col. 1 lines 10-14. It is necessary for a modem to have a receiver);

means for measuring a noise power level present in the system (block 306 in fig. 6a, col. 6 line 15);

means for determining a total noise power level for a first tone in the multiple tone signal (col. 6 lines 50-53) based upon an equivalent noise power algorithm (col. 6 lines 31-34, the estimate of the background noise power is interpreted to be the equivalent noise power algorithm); and

means for using the equivalent noise power algorithm to compensate the measured noise power level (col. 6 lines 31-34, the estimate of the background noise power is interpreted to be the equivalent noise power algorithm) if the detector module indicates that the asymmetric Gaussian noise source exists in the background noise.

However Stiscia fails to teach wherein the detector module detects an asymmetric Gaussian noise source in the background noise. Balch teaches detection of Gaussian noise levels (col. 5 lines 20-24 and lines 43-44) and when there is an indication of asymmetric noise in the background noise (the moving average line in fig. 1 of Balch is interpreted to be an indication of asymmetric noise).

Therefore taking the combined teachings of Stiscia and Balch as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Gaussian noise detector of Balch into the receiver of Stiscia.

The motivation to combine Balch and Stiscia would be to prevent a validation threshold from falling below a programmed minimum signal-to-noise ratio (col. 4 lines 12-16).

3. Claims 5, 6, 8, 15, 16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stiscia (US6738418) and Balch et al (US5909178) and further in view of Bosco et al (US20030048368).

Re claim 5, the modified invention of Stiscia teaches a method further comprising:

calculating a gain factor associated with the asymmetric noise pattern (col. 6 lines 8-10 in Stiscia). However the modified invention of Stiscia fails to teach applying the gain factor to the measured noise power level to calculate an equivalent total noise power.

Bosco teaches multiplying a gain factor to a noise level factor (π 0055).

Therefore taking the modified teachings of Stiscia and Balch with Bosco as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the application of a gain factor of Bosco into the receiver of Stiscia and Balch. The motivation to combine Bosco, Balch and Stiscia would be to determine the highest Dmax value that will have a Kn parameter equal to 1 (π 0055).

Re claim 6, the modified invention of Stascia teaches a method further comprising:

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determining a signal-to-noise ratio (col. 8 lines 38-40 in Stascia) based on a signal power of the first tone (it is well known in the art that the signal-to-noise ratio is calculated with a signal power) and the calculated equivalent total noise power (col. 6 lines 37-41 in Stascia, the estimate of the noise energy in the frequency bins is interpreted to be the equivalent noise power).

Re claim 8, the modified invention of Stiscia teaches a method further comprising:

applying a gain factor (§0055 in Bosco) to an average of the measured noise power level (col. 6 lines 24-25 in Stascia) to calculate an equivalent total noise power of an effective symmetric Gaussian noise present in the system, if the noise source is generating the asymmetric pattern of noise (the moving average line in fig. 1 of Balch is interpreted to be an indication of asymmetric noise).

Re claim 15, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 5.

Re claim 16, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 6.

Re claim 23, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 8.

4. Claims 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stiscia (US6738418), Balch et al (US5909178) and of Bosco et al (US20030048368) and further in view Bolinith et al (US20050047514).

Re claim 12, the modified invention of Stiscia fails to teach a method comprising: determining bit-loading based on the signal-to-noise ratio based on the equivalent total noise power. However Bolinith teaches a bit-loading device (device 9 in fig. 1) which controls bit loading depending on a signal-to-noise ratio (§0029).

Therefore taking the modified teachings of Stiscia, Balch and Bosco with Bolinith as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the application of a bit-loading device of Bolinith into the receiver of Stiscia, Balch, and Bosco. The motivation to combine Bolinith, Bosco, Balch and Stiscia would be to provide a multi-carrier system with improved data transfer properties (§0029).

Re claim 21, all of the claim limitations as recited have been analyzed and addressed in the above rejections with respect to claim 12.

Allowable Subject Matter

5. Claims 3, 9-11, 13, 18-20, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon-Viet Q. Nguyen whose telephone number is 571-270-1185. The examiner can normally be reached on monday-friday, alternate friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Nguyen/


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER